AMENDMENTS TO THE CLAIMS

This following listing of claims replaces all previous versions of the claims in this application.

Listing of Claims

1-14. **(Canceled)**

15. (**Currently Amended**) A kit for polynucleotide synthesis on a target nucleic acid, the kit comprising: a thermostable polymerase, ~~reversibly bound to~~ a non-nucleic acid polyanion~~;~~, at least 1.5 mM magnesium and between about 35-100 mM monovalent cations, with instructions to combine said non-nucleic acid polyanion and said thermostable polymerase to inhibit DNA synthesis in a temperature dependent manner. ~~and an appropriate polymerase reaction buffer.~~

16. **(Original)** The kit of claim 15 wherein the thermostable polymerase is Thermus aquaticus.

17. **(Original)** The kit of claim 15 wherein the non-nucleic acid polyanion is dextran sulfate.

18. **(Original)** The kit of claim 15 further comprising at least one nucleotide 5'-triphosphate.

19. **(Original)** The kit of claim 15 further comprising a pair of primers for the target nucleic acid.

20. **(Previously Presented)** The kit of claim 15 wherein the non-nucleic acid polyanion has a molecular weight of from 1,500 to 500,000 da.

21. **(Currently Amended)** The kit of claim 15 wherein the non-nucleic acid polyanion has a molecular weight of from 4,000 to 15,000 da.

22. **(Currently Amended)** A pre-inhibited thermostable polymerase composition for polynucleotide synthesis comprising: a thermostable polymerase~~;~~ reversibly bound to a non-nucleic acid polyanion~~;~~ in a storage buffer ~~a polymerase reaction buffer having monovalent cations between 35-60 mM; at least one dNTP; a template nucleic acid molecule; and appropriate template nucleic acid primers~~.

23. **(Previously Presented)** The composition of claim 22 wherein the non-nucleic acid polyanion has a molecular weight of from 1,500 to 500,000 da.

24. **(Previously Presented)** The composition of claim 22 wherein the non-nucleic acid polyanion has a molecular weight of from 4,000 to 15,000 da.

25. **(Previously Presented)** The composition of claim 22 wherein the non-nucleic acid polyanion has a molecular weight of from 4,000 to 10,000 da.

26. **(Currently Amended)** The composition of claim 22 wherein the non-nucleic acid polyanion is a synthetic organic polysulfate selected from the group poly(anetholsulfonic acid), polyvinyl sulfate, and ~~15~~ polystyrene sulfate.

27. **(Previously Presented)** The composition of claim 26 wherein the synthetic organic polysulfate is a sulfated oligo- or polysaccharide.

28. **(Previously Presented)** The composition of claim 27 wherein the sulfated oligo- or polysaccharide is a sulfated polymer or copolymer of the sugars selected from the group consisting of glucose, N-acetyl-glucosamine, galactouronic acid, hyalouronic acid, N-acetyl-galactosamine and fucose.

29. **(Previously Presented)** The composition of claim 28 wherein the sulfated polymer or copolymer of the sugar is selected from the group consisting of dextran sulfate, fucoidan, heparin, heparan sulfate, chondroitin polysulfate, keratan polysulfate, xylan polysulfate, and pentosan polysulfate.

30. **(Original)** The composition of claim 22 wherein the non-nucleic acid polyanion is at a concentration of from 0.1 μM to 1.5 μM.

31. **(Original)** The composition of claim 22 wherein the non-nucleic acid polyanion is at a concentration of from 0.2 μM to 1.0 μM.

32. **(Previously Presented)** The composition of claim 22 wherein the thermostable polymerase is selected from the group consisting of DNA polymerase, RNA polymerase, reverse transcriptase, and mixtures thereof.

33. **(Original)** The composition of claim 32 wherein the thermostable polymerase is a DNA polymerase and the DNA polymerase is from a thermophilic Eubacteria or a Archaebacteria.

34. **(Previously Presented)** The composition of claim 33 wherein the thermostable polymerase is selected from the group consisting of Thermus aquaticus, T. thermophilus, T. brockianus, T. flavus, T. ruber, Thermatoga maritima, Thermoplasma acidophilus, Pyroccocus furiosus, Pyroccocus woesii, Pyroccocus spec., Sulfolobus spec., and mixtures thereof.

35. **(Previously Presented)** The composition of claim 32 wherein the thermostable polymerase is a reverse transcriptase and wherein the reverse transcriptase is selected from the group consisting of MmLV reverse transcriptase, AMV reverse transcriptase, RSV reverse transcriptase, HIV-1 reverse transcriptase, HIV-2 reverse transcriptase, and mixtures thereof.

36-42. **(Canceled)**.

43. **(New)** A kit for polynucleotide synthesis on a target nucleic acid comprising the pre-inhibited thermostable polymerase composition of claim 22 in one container and optionally in a separate container a reaction buffer comprising monovalent cations between about 35-100 mM.

44. **(New)** The kit of claim 43 wherein the thermostable polymerase is Thermus aquaticus.

45. **(New)** The kit of claim 43 wherein the non-nucleic acid polyanion is dextran sulfate.

46. **(New)** The kit of claim 43 further comprising at least one nucleotide 5'-triphosphate.

47. **(New)** The kit of claim 43 further comprising a pair of primers for the target nucleic acid.

48. **(New)** A kit according to claim 15, wherein said instructions further require preincubation of said non-nucleic acid polyanion and said thermostable polymerase in a reaction mixture at ambient temperature prior to addition of template nucleic acid and appropriate primers.